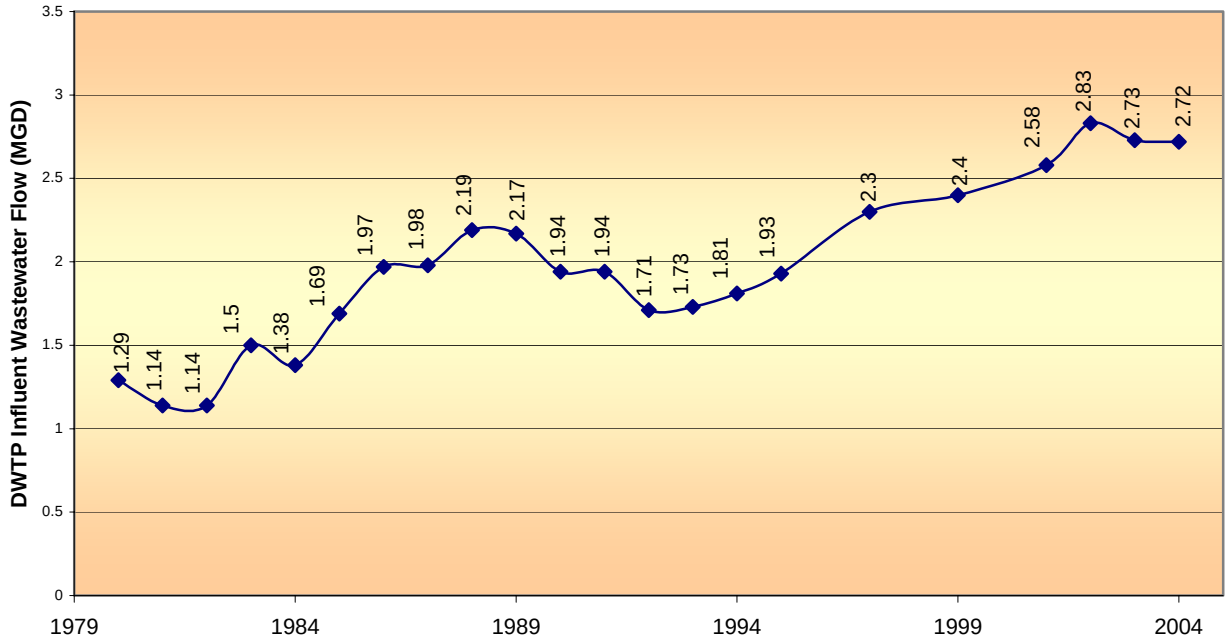
4. Wastewater Flows

This Section discusses current and historical wastewater flows at the DWTP and the IWTP. It also presents projected domestic wastewater flows and quantifies constituents measured at the influent of the DWTP.

4.1. Domestic Wastewater

The DWTP was originally constructed in 1979 and became operational in 1980. Historical average daily influent flows to the DWTP from 1980 through 2004 are shown in **Figure 4-1**.

Figure 4-1: Historical Average Annual DWTP Influent Flow



4.1.1. Current Domestic Wastewater Flows

Over time, the capacity of the DWTP's percolation beds appear to have diminished. Consequently, in the late 1990's the City explored emergency diversion of domestic wastewater for treatment and disposal at the IWTP, which had surplus treatment and disposal capacity available. At the time of this diversion request the IWTP operated under a WDR, which allowed up to 7.5 MGD of cannery waste on a seasonal basis. With only one cannery in operation industrial waste flows were less than 3.5 MGD. Surplus treatment capacity is therefore available at the IWTP on a seasonal basis.

In November 1998, the City requested approval from the RWQCB to divert domestic wastewater flow to the IWTP. This request was predicated on having surplus treatment and disposal capacity at the IWTP. The RWQCB granted the City's request and subsequently adopted Order 00-020 (**Appendix A**) on May 20, 2000, allowing temporary diversion of domestic wastewater to the IWTP. The diversion of domestic wastewater to the IWTP was permitted on a temporary basis until adequate treatment and disposal capacity could be developed at the DWTP. On October 21, 2005 the RWQCB adopted Order No. R3-2005-0142 extending the period of time in which the City could divert domestic wastewater to the IWTP

to December 31, 2007. The chronology of events and specific diversion allowances are described in detail in **Section 1**.

San Benito Foods is the only current contributor of industrial wastewater to the IWTP. All other wastewater flow to the IWTP enters via the storm water collection system. **Table 4-1** summarizes domestic and industrial wastewater flows for the City of Hollister in 2004. *The average annual domestic wastewater flow for the City of Hollister for the year 2004 was 2.72 MGD.* This table summarizes total domestic wastewater flow measured at the DWTP plus domestic wastewater diversions to the IWTP as measured at the City's transfer pump station. Because industrial and domestic wastewater flows are combined at the IWTP, industrial flows were calculated by subtracting domestic wastewater diversions measured at the transfer pump station from total influent flow measured at the IWTP headworks.

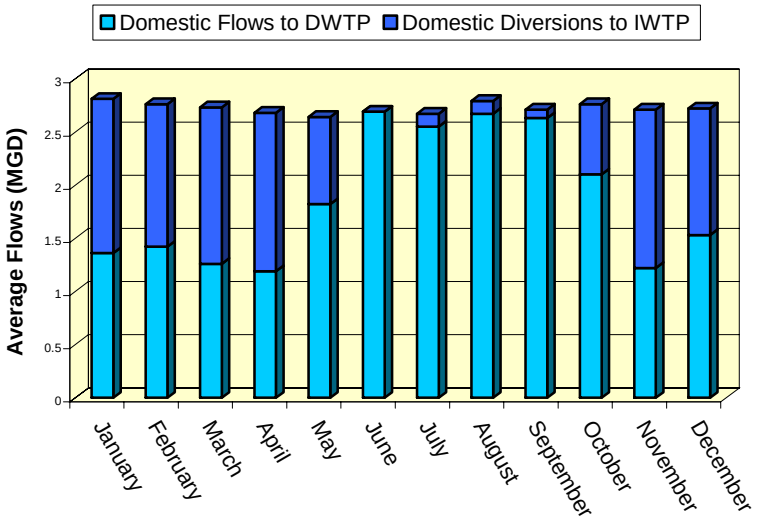
Table 4-1: Current Wastewater Flows in the City of Hollister

	Average Monthly Wastewater Flows (MGD) in 2004				
Month	Domestic Flows to DWTP[a]	Domestic Diversions to IWTP[b]	Estimated Domestic Flow[c]	Flows to IWTP[d]	Estimated Industrial Flow[e]
January	1.36	1.45	2.81	1.50	0.05
February	1.42	1.34	2.76	1.55	0.21
March	1.26	1.47	2.73	1.48	0.01
April	1.19	1.49	2.68	1.47	- 0.02
May	1.82	0.82	2.64	0.86	0.04
June	2.69	0.00	2.69	0.06	0.06
July	2.55	0.12	2.67	2.64	2.52
August	2.67	0.12	2.79	3.45	3.33
September	2.63	0.08	2.71	1.47	1.39
October	2.10	0.66	2.76	0.77	0.11
November	1.22	1.49	2.71	1.51	0.02
December	1.53	1.19	2.72	1.36	0.17

[a] Flows measured at the DWTP headworks in 2004.
[b] Domestic wastewater flows diverted to the IWTP in 2004 as measured at the transfer pump station.
[c] Total estimated domestic wastewater flow calculated as domestic flow to the DWTP plus domestic flow diversions to the IWTP.
[d] Flows measured at the IWTP headworks in 2004.
[e] Industrial wastewater flow calculated as flow to the IWTP less the domestic flow from the transfer pump station.

Domestic wastewater flows in the City of Hollister averaged approximately 2.72 MGD in 2004 with little inflow and infiltration (I/I) observed. Industrial wastewater flows varied significantly over the year with peak flows occurring during the canning season months of July through October. The domestic wastewater flows sent to the IWTP plus the flows to the DWTP are shown in **Figure 4-2** by month for the year 2004.

Figure 4-2: Domestic Wastewater Average Monthly Flows in 2004



4.1.2. Projected Domestic Wastewater Flows

Future projected wastewater flows are based on projected population growth from the beginning of 2008. The current flow of 2.72 MGD is assumed for the year 2008 because flows are not expected to increase significantly in the interim because of the City's moratorium on new sewer connections until implementation of the LTWMP. Population growth projections and associated increases in wastewater flow are based upon the assumptions presented in the draft *City of Hollister General Plan*, *March 2005* (City of Hollister, 2005). Assumptions used in the generation of these wastewater flow projections include:

- 2.6% annual increase in residential development
- 2.9% annual increase in commercial development
- 2.6% annual increase in school development
- 2.67% weighted annual average increase in wastewater flow (General Plan Build-Out)
- 0.25 MGD flow at Ridgemark WWTP beginning in 2008 (Sunnyslope County Water District)
- 4.2% annual increase in wastewater flow from Ridgemark WWTP (San Benito County Water District, Schaaf & Wheeler, 1999).

Future Average Dry Weather Flow (ADWF) projections for the City of Hollister are shown in **Table 4-2**.

Table 4-2: Wastewater Flow Projections for the City of Hollister

Year	ADWF (MGD)			Year	ADWF (MGD)		
	Hollister[a]	SCWD[b]	Total		Hollister[a]	SCWD[b]	Total
2008	2.72	0.25	2.97	2016	3.36	0.35	3.71
2009	2.79	0.26	3.05	2017	3.45	0.36	3.81
2010	2.87	0.27	3.14	2018	3.54	0.38	3.92
2011	2.94	0.28	3.22	2019	3.63	0.39	4.02
2012	3.02	0.29	3.31	2020	3.73	0.41	4.14
2013	3.10	0.31	3.41	2021	3.83	0.43	4.26
2014	3.19	0.32	3.51	2022	3.93	0.44	4.37
2015	3.27	0.33	3.60	2023	4.04	0.46	4.50

[a]Hollister wastewater flows assumed to increase 2.67% per year (Weighted growth average, reference Hollister General Plan).
[b]Sunnyslope County Water District Service area wastewater flows assumed to increase 4.2% per year (San Benito County Planning Department).

The DWTP design flow must allow for seasonal increases in flow due to wet weather inflow and infiltration (I/I). Historical wet weather flows at the DWTP can exceed ADWF by as much as 10 percent. ***A design treatment capacity of 5.0 MGD was therefore selected for the DWTP to allow for 10 percent I/I.*** **Table 4-3** summarizes the design flows selected for the new DWTP.

Table 4-3: Summary of Design Wastewater Flow (MGD) for the DWTP[a]

Flow Condition	Average Dry Weather Flow (ADWF)	Peak Wet Weather Flow (PWWF)[b]	DWTP Design Capacity[c]	Peak Hourly Flow[d]
Design (2023)	4.5	5.0	5.0	10.0

[a] Rounded to the nearest 0.1 MGD.
[b]Assumed to be ADWF plus 10 percent I/I.
[c] DWTP design capacity=PWWF.
[d] Assumed to be 2.0 times the DWTP design capacity.

4.1.3. Domestic Wastewater Influent Characteristics

In January 2003, the City completed a preliminary NPDES sampling report to assess the feasibility of pursuing a surface water discharge to the San Benito River (HydroScience Engineers, 2003c). This study conducted sampling and analytical testing of ambient water quality conditions at the river as well as influent wastewater to the DWTP. The parameter list shown in **Table 4-4** was derived from the California Toxics Rule (CTR) priority pollutant list and is detailed in the NPDES Monitoring Requirements prepared by the Central Valley RWQCB. The study tested for constituents likely to be regulated by the RWQCB Basin Plan Objectives, CTR, and State Implementation Plan (SIP).

Table 4-4: Raw Wastewater Sampling CTR Parameter List

Parameter	EPA Analysis Method	Parameter	EPA Analysis Method
General Water Quality		**Semi-Volatile Organic Compounds**	
Ammonia	350.2	SVOC	8270
Nitrate as Nitrogen	300.0	Metals	
Nitrite as Nitrogen	300.0	13 metals	6020/7000
Fluoride	300.0	Arsenic, lead, mercury	1631
Total Kjeldahl Nitrogen (TKN)	SM 4500	Chromium VI	7199
Phosphorus (Total)	365.2	**Organics**	
TDS	160.1	Pesticides and PCBs	8081A/8082
TSS	160.2	OP pesticides	8141A
Hardness	SM 2340	Herbicides	8151

Parameter	EPA Analysis Method	Parameter	EPA Analysis Method
Sodium	3050/6020	Dioxins	8290
Volatile Organics		**Conventional**	
VOC	8260	Cyanide	335.2
		Asbestos	600/R

The results of the January 2003 sampling of the raw wastewater are shown in **Table 4-5**. Based on the preliminary NPDES sampling report, water quality analysis in the influent wastewater did not result in significant concentrations of constituents that would preclude an NPDES permit. Measured concentrations of these parameters in the influent wastewater, compared to ambient river concentrations, were either below regulated concentrations or could be mitigated to levels that would achieve compliance with State and Federal limits. In addition to the constituents below, it is likely that discharge conditions would also require compliance with the maximum contaminant levels (MCLs) listed in **Section 5**.

Table 4-5: Raw Wastewater Detectable Results Summary

General Water Quality Parameters			
Ammonia as Nitrogen	38 mg/L	pH	7.41 pH units
Chloride	860 mg/L	Phosphorus, Total	5.8 mg/L
Hardness, as $CaCO_2$	460 mg/L	Sulfate (SO_4^{2-})	170 mg/L
Nitrate, as Nitrogen	1.50 mg/L	Sulfide, as S	1.20 mg/L
Nitrite, as Nitrogen	0.5 mg/L	TDS	2,000 mg/L
Volatile Organic Compounds			
1,1,2,2-Tetrachloroethane	<1 microgram (µg)/L	Chloroform	2.10 µg/L
1,4-Dichlorobenzene	27 µg/L	Dibromochloromethane	2.70 µg/L
Acrolein	<5 µg/L	Dichlorobromomethane	0.69 µg/L
Bromoform	4.10 µg/L	Dichloromethane	<1 µg/L
Semi-Volatile Organic Compounds			
Bis(2-ethylhexyl)phthalate	19.0 µg/L	Di-n-octylphthalate	ND
Butyl Benzyl phthalate	6.00 µg/L	Diethyl phthalate	7.00 µg/L
Metals			
Aluminum	850 µg/L	Iron	370 µg/L
Antimony	ND	Lead	<5 µg/L
Arsenic	1.70 µg/L	Mercury	0.092 µg/L
Barium	ND	Manganese	63.0 µg/L
Beryllium	ND	Nickel	7.40 µg/L
Cadmium	ND	Selenium	3.10 µg/L
Chromium, Total	9.50 µg/L	Silver	1.90 µg/L
Chromium, VI	ND	Thallium	ND
Copper	80.0 µg/L	Zinc	100 µg/L
Dioxins and Furans Congeners			
2,3,7,8-TCDD	<1.81 picogram(pg)/L	2,3,4,7,8-PentaCDF	<1.81 pg/L
1,2,3,7,8-PentaCDD	<4.22 pg/L	1,2,3,4,7,8-HexaCDF	<0.96 pg/L
1,2,3,4,7,8-HexaCDD	<2.79 pg/L	1,2,3,6,7,8-HexaCDF	<1.07 pg/L
1,2,3,6,7,8-HexaCDD	<3.24 pg/L	1,2,3,7,8,9-HexaCDF	<1.21 pg/L
1,2,3,7,8,9-HexaCDD	<2.96 pg/L	2,3,4,6,7,8-HexaCDF	<1.53 pg/L
1,2,3,4,6,7,8-HeptaCDD	63.2 pg/L	1,2,3,4,6,7,8-HeptaCDF	19.0 pg/L
OCDD	784 pg/L	1,2,3,4,7,8,9-HeptaCDF	<1.28 pg/L
2,3,7,8-TCDF	<1.65 pg/L	OCDF	94.30 pg/L
1,2,3,7,8-PentaCDF	<2.09 pg/L		

ND – Not Detected

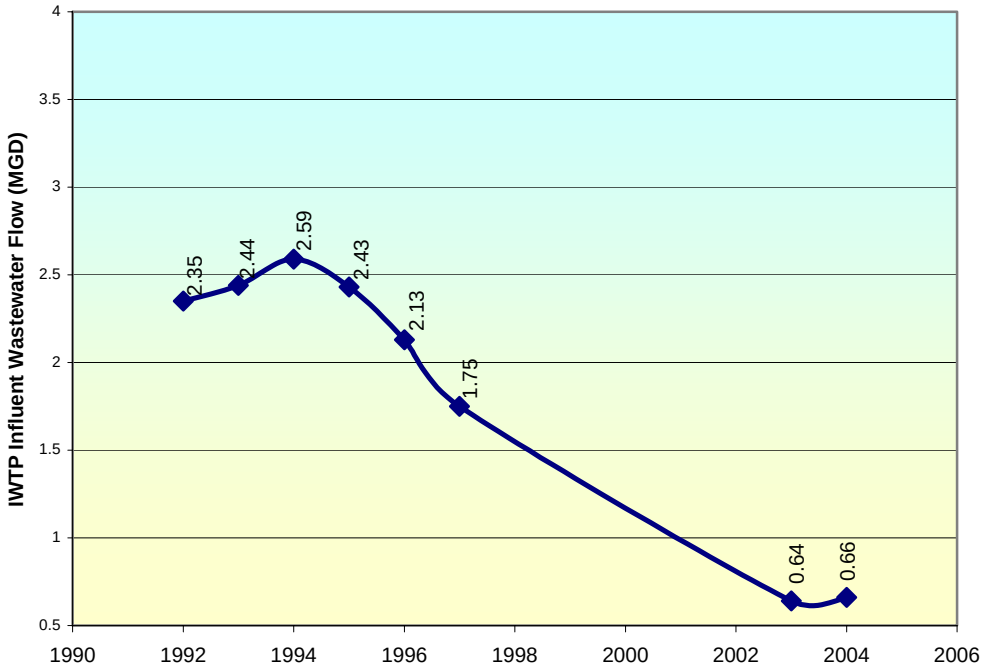
4.2. Industrial Wastewater

Historical, current, and projected buildout flows to the IWTP were evaluated to develop planning level wastewater flows used in the development of the LTWMP.

4.2.1. Industrial Wastewater Flows

Historical average influent flows to the IWTP from 1992 to 1997 are shown in **Table 4-3**. These flows represent industrial wastewater flows, prior to commencement of domestic diversions to the IWTP. After 1997 industrial flows could no longer be measured directly because they were co-mingled with diverted domestic wastewater. Data on domestic water diversions was needed to estimate industrial wastewater flows (See **Table 4-1**). Estimated industrial wastewater flows are available for 2003 and 2004. Industrial wastewater flows have decreased significantly over the last ten years.

Figure 4-3: Historical Average Annual Influent IWTP Flow



As described in **Section 1**, the RWQCB granted the City's request to divert domestic wastewater flow to the IWTP and adopted Order 00-020 on May 20, 2000, allowing temporary diversion of domestic wastewater to the IWTP. Estimated current domestic wastewater flows, including those diverted to the IWTP and the estimated industrial flows based on the total flows to the IWTP are presented in **Table 4-1**. Current flow to the IWTP is comprised of cannery flow, storm water flow, and diverted domestic wastewater flow. Cannery and storm water flows are seasonal. Domestic wastewater diversion occurs on a year-round basis.

Similar to the DWTP, I/I generally does not represent a significant fraction of the IWTP influent flow. Historically, the City has not detected significant infiltration as a result of groundwater presence. Inflow, however, can be a significant short-term problem, especially during heavy rainstorms when the plant can receive substantial storm water flow.

4.2.2. Projected Industrial Wastewater Flows

Industrial wastewater flow projections were not developed because any future growth in the areas of the City zoned for industrial developments would be treated at the DWTP. The IWTP is only designed to handle cannery flows so it is assumed that future IWTP flows would remain at or near current levels. At the time of this study, the City therefore does not anticipate a significant change in industrial wastewater flows in the future. The design flow for the IWTP is an ADF of 3.5 MGD. The implementation of a Wastewater/Storm Water Separation Project will not reduce total flows. It will only segregate flows for odor control purposes if it is implemented.

4.2.3. Industrial Wastewater Influent Constituents

The *2001 Annual Self Monitoring Report* and *Report to the RWQCB* (Bracewell Engineering, 2001), summarized in **Table 4-5,** was used to characterize the IWTP wastewater**.**

Table 4-6: IWTP Raw Industrial Wastewater Characteristics (mg/L)

Constituent	Canning Season	Non-Canning Season
BOD	1,200 [a]	210 [c]
TSS	NA [b]	350 [c]
TKN	NA [b]	35 [c]
TDS	1,800 [d]	1,400 [c]
SO_4^{2-}	NA [b]	270 [c]
Nitrate (NO_3^-)	NA [b]	7 [c]
Cl^-	170 [e]	360 [c]
Sodium	300 [d]	300 [c]

[a] Source: Bracewell Engineering, Inc., 2001.
[b] Not analyzed as part of the regular monitoring program.
[c] Based on 7 samples. Source: 2001 Annual Self Monitoring Report.
[d] Based on 3 samples. Source: 2001 Annual Self Monitoring Report.
[e] Based on 2 samples. Source: 2001 Annual Self Monitoring Report.

Mass loadings of conventional pollutants are summarized in **Table 4-7** for the LTWMP and build-out conditions during the canning season.

Table 4-7: IWTP Raw Industrial Wastewater Loading for the LTWMP

Constituent	Average Concentration (mg/L)	Mass Loading [Pounds Per Day (lbs/Day)] [a, b]
BOD	1,200	35,100
TSS	NA	NA [c]
TKN	NA	NA [c]
TDS	1,800	52,600
SO_4^{2-}	NA	NA [c]
NO_3^-	NA	NA [c]
Cl^-	170	5,000
Sodium	300	8,800

[a] Based on ADF.
[b] Rounded off to the nearest hundredth.
[c] Not analyzed.